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PRINCIPES

Journal of The Palm Society

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THE PALM SOCIETY

A non-profit corporation primarily engaged in the study of the palm family in all its aspects throughout the world. The Society relies on voluntary contribution for support, and membership is open to all persons interested in the family. Requests for information about membership or for general information about the Society should be addressed to the Executive Secretary.

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PRINCIPES

JOURNAL OF THE PALM SOCIETY

An illustrated quarterly devoted to information about palms published in January, April, July, and October, and sent free to members of The Palm Society

EDITOR: Harold E. Moore, Jr.

EDITORIAL BOARD:

Paul H. Allen, David Barry, Jr., Duncan Clement, Walter H. Hodge, Eugene D. Kitzke, Harold F. Loomis, Nixon Smiley, Dent Smith.

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Promenade planting of *Roystonea oleracea*, Jardim Botanica, Rio de Janeiro, Brazil, 1913. USDA photo. See also page 17. Still another promenade appears in *Principes* 2:36. 1958.

NEWS OF THE SOCIETY

Biennial Meeting

The Palm Society will hold its regular biennial meeting at Fairchild Tropical Garden, near Miami, Florida, on April 23, 1960. Details of the business meeting, program and social activities will be found on the mimeographed sheet inserted in this number of PRINCIPES.

Resignation of the Treasurer

Frank R. May, who has served the Society as Treasurer since April, 1958, was forced to resign, due to pressure of business. All members of the Society will surely want to thank him for his important work, and wish him continued success in business and as a collector of palms. Mr. John E. Turner, of Miami, Florida, has consented to become acting Treasurer until the biennial meeting in April, 1960, at which time there will be an election of officers.

California News

About thirty-five members and friends of the Society who live in California gathered on August 30th, 1959, for a tour of Santa Barbara public parks and private estates in Montecito. The group was guided by Messrs. W. G. Beittel, Santa Barbara City Arborist, E. R. Blakley of the Santa Barbara Botanic Garden, and Eugene Baciu, seedsman.

The first stop was at famed "Lotusland," the estate of Mme. Ganna Walska, a garden showplace in which innumerable specimens of mature palms grow in landscapes of succulents, cacti, water gardens, formal gardens and woodland. In this large estate the various gardens are so well separated from each other that each can be enjoyed alone; the ferns, cycads, water plants, various exotics, the topiary garden, natural stone sculpture, garden theatre and the silver garden can be admired in turn. The palms have been incorporated effectively in their proper areas. Mme. Walska generously opens the estate to the public at certain times. Those who missed this trip and would like to see the estate can inquire from Mr. W. G. Beittel, 1510 Mission Ridge Road, Santa Barbara as to when it will again be open.

1. California members see *Rhopalostylis sapida* (with ringed trunks) naturalized at the El Mirador estate in Montecito.

At the former Gillespie estate, now being sub-divided, and at El Mirador, naturalized stands of *Rhopalostylis*, *Archontophoenix* and *Howeia* were seen growing under sheltering trees, framed by towering washingtonias and arecastrums. The day was concluded by visits to the parks and public grounds in Santa Barbara, where many old and lovely specimens are to be seen.

For the convenience of those who wish to contact Mr. Eugene Baciu in regard to seeds of palms seen on this tour, his

address is 1835 Sunset Ave., Santa Barbara.

* * *

In October Mr. David Barry entertained a large group at California Jungle Gardens, showing his extensive collection of *Chamaedorea*. This meeting was most rewarding and informative. Guests had an opportunity to get acquainted afterwards, while enjoying refreshments served by Mr. Barry.

* * *

While announcements have been mailed to all California members heretofore, further announcements of meetings and activities of this California group will be sent only to those who have sent three or more stamped, self-addressed postcards to the local secretary (address below). If any additional California members wish to be notified of these activities, they are urged to send postcards to the secretary immediately.

* * *

California members wish that California nurserymen would take advantage of the classified column in PRINCIPES to advertise the availability of various species in their nurseries. Almost all members contacted seem anxious to increase their collections.

* * *

Mr. George Martini reports that for three months in a row the plant of the month sponsored by the Southern California Horticultural Institute was a palm, with The Palm Society receiving a "plug" each month.

* * *

Members having visited Mexico recently in search of palms to view or collect are asked to contact the secretary.

BETTY HERMAN,
Secretary, California Group
701 Tigertail Road
Los Angeles 49

Palms at Memorial Garden, Santa Ana

An interesting palm collection is being developed at the Memorial Garden on the County Fairgrounds at Santa Ana, California. When the garden was dedicated in March, 1954, three well-known palms were planted: the California and Mexican fan palms (*Washingtonia filifera and W. robusta*) and the Mediterranean fan palm (*Chamaerops humilis*), the only palm native to Europe. Lately a Senegal date palm (*Phoenix reclinata*) has been added, the gift of Mr. Frederick Lang, landscape architect of Laguna Beach, who designed the garden. A silver-blue Mexican fan palm and a Guadalupe fan palm (*Erythea armata* and *E. edulis*) were set out as part of the Arbor Day planting, 1959. Those palmlike members of the lily family, *Doryanthes* and *Dracaena*, have been blended in with the palms.

This garden is a memorial to the Santa Ana Air Base and the Veterans of Orange County. Mrs. Weston Walker, a Palm Society member, is one of the sponsors. She has sent the Society a photograph of a planting of *Archontophoenix* (often mis-named *Seaforthia*) palms with *Strelitzia reginae* beside the headquarters Fire Station in Santa Ana. She says: "All three of our fire stations rate 100 per cent in our annual civic beautification campaign."

Proposed Botanical Garden in Texas

Mr. J. Norman Heard, Librarian at Pan American College, Edinburg, Texas, and president of the Valley Botanical Garden Association, is a member of The Palm Society. He is asking other members for help in obtaining seeds for a botanical garden which is being planned for the Lower Rio Grande

Valley. He writes: "It is the objective of the Valley Botanical Garden Association to . . . preserve our native plants and introduce tropicals and other interesting plants which will grow here. We will label these plants and make the facility available to Pan American College for teaching both credit and evening courses and workshops . . . One of our objectives is to employ handicapped persons whenever possible . . . and train mentally retarded young men to work with plants." Anyone interested in helping Mr. Heard with suitable palm seeds may write to him at Pan American College, Edinburg, Texas.

Travelling Members

The Society's President made a two-month visit to the far east, chiefly Indonesia, last fall. On his way home he visited briefly in Japan and was able to meet and talk with several Society members while there, thanks to the fine hospitality offered him and Mrs. Hodge by Mr. Toshihiko Satake and his daughter.

The Editor of PRINCIPES spent about three months in Mexico, continuing his study of palms, with major emphasis on *Chamaedorea*.

Mr. Nat De Leon made a visit to Colombia, South America, where for three weeks he labored up and down mountains, seeing palms which most of us have never yet beheld. He made some fine color slides of these lovely plants, and showed them at meetings of Society members in Miami and Fort Lauderdale. He hopes to return next spring for another look and to collect more seeds.

Mr. and Mrs. J. G. Suthard spent unforgettable days botanizing in Hawaii. Mr. and Mrs. Harvey Beswick visited six islands in the West Indies and brought back palm pictures. The Executive Secretary would be happy to hear from other members about their travels. We hope that all of them will share their experiences with the rest of us.

LUCITA H. WAIT

THE EDITOR'S CORNER

The effects of palms on human interests are far-reaching. Three articles in this issue are furnished by new contributors whose concern with palms extends to philately, landscape design and etymology. Mrs. Claude Weber points out the importance of palms for those philatelists whose specialty is stamps portraying plants. Mrs. Weber was born in Paris, France, and attended the University of Geneva, Switzerland, before coming to the United States. She has been a botanist on the staff of the Harvard University Herbarium since 1957 and is currently a candidate for a doctorate at Radcliffe College.

Desmond Muirhead writes that his article is strongly slanted toward Arizona and California so far as materials are concerned, but undoubtedly persons interested in landscaping with palms will be able to achieve the same design effects with materials suitable to their particular localities. Mr. Muirhead has studied engineering at Cambridge University, England, horticulture, forestry and botany at the University of British Columbia, and landscape design and city planning at the University of Oregon. His Canadian office has been responsible for the entire landscape development for Kitimat and a town plan for Richmond, British Columbia, for landscaping at Jasper Lodge, Alberta, the University of Saskatchewan, and for other projects across Canada. In the United States, Muirhead and Associates have been active in the western states. One of their projects received a national

Continued on page 35

Diseases of the Coconut Palm*

M. K. CORBETT

Plant Pathology Department, University of Florida cooperating with the State Plant Board of Florida, Gainesville, Florida

V.—FROND-DROP

The fifth disease of coconut palms to be considered in this series is frond-drop or false wilt. This abnormal condition, characterized by premature dropping of fronds, has been reported from Trinidad and Jamaica (1, 2, 4). Briton-Jones (1) termed the condition false wilt to separate it from the other diseases of the coconut palm. Nutman and Roberts (4) have recently termed the condition frond-drop.

The condition occurs in palms of all ages but appears to be more rapid and pronounced in young bearing trees (4). The first symptom is a collapse of the older fronds, usually while still green. The fronds hang down beside the trunk and the condition progresses until only a tuft of fronds remains in the upright position. The fruits, especially during heavy production, which may normally be supported by the fronds slip off and consequently some may fall prematurely. Rotting of the bud, which frequently accompanies other coconut diseases, does not necessarily occur with frond-drop.

Figure 2 illustrates a relatively young palm in Jamaica whose lower or older fronds have collapsed. A few of the fronds are still green, but most of them do not necessarily pass through a stage of yellowing. They may remain green, while collapsed, for several weeks and then turn reddish-brown and eventually fall to the ground (1). The inflorescences tend to become progressively smaller and produce fewer nuts, while the nuts thus produced tend to be smaller and elongated (4). The inflorescences upon opening dry up and blacken. The unopened inflorescences, unlike those affected by lethal yellowing (unknown disease), do not discolor (3, 4).

Figure 3 illustrates a more advanced stage of the disease in an older palm in Jamaica. Most of the fronds have collapsed, leaving only a few in the upright position. The diseased palm may be compared with the healthy one on the right in figure 3. It will be noted that the crown of a normal coconut palm is more or less spherical; as the older leaves die and drop from the tree, new leaves are formed at the apex and those in between bend downward to maintain the spherical appearance more or less constant. Any marked change in shape of the crown suggests that something is wrong. The contrast between the two palms in figure 3 is very striking and in this case it is indeed easy to locate the diseased palm. Such comparison is not always so readily available and the line of demarkation between healthy and diseased palms may be very narrow. In Florida, where the coconut palm is used mainly for ornamental purposes, this means of distinguishing a healthy palm is of little use. The lower or older fronds and many of the mature fruits are usually trimmed off as a safety precaution.

The etiology or cause of frond-drop is unknown, but some workers attribute it to a genetical weakness of the palm (1,

*For previous articles in this series, see PRINCIPES 3:5-12; 49-52; 83-86; 117-120. Florida Agricultural Experiment Station Journal Series, No. 848.

2. Young coconut palm in Jamaica exhibiting symptoms of frond-drop. Note presence of fruit.

2, 5). Briton-Jones (1) suggested that palms that normally have fronds with a long leaf stalk (from trunk to basal leaflets) also tend to have long fruit branches. Conversely, short fruit branches are correlated with palms having short leaf stalks. In the latter, the fruit are borne nearer the trunk and the weight of the developing fruit on the leaf stalks is not so great as in palms with long stalks and long fruit branches. He believes that this difference (genetically controlled), especially in years of heavy production, accounts in part for false wilt or frond-drop (1). Briton-Jones (1) suggests that heavy rains and high winds could have the same effect upon genetically weakened fronds of palms that are not in heavy production.

Briton-Jones (1) reports that palms may recover from the false wilt or frond-drop condition. Nutman and Roberts

3. Old coconut palm in Jamaica exhibiting symptoms of frond-drop. Note comparison with healthy palm at the right.

(4) report that in Jamaica they have never noticed a case of recovery from the frond-drop disease. Several organisms, mostly saprophytic (growing on dead or dying tissue), have been isolated from diseased palms, but according to Briton-Jones (1) they could not be responsible for this phenomenon. Nutman

and Roberts (4) have found a certain amount of root die-back, but not significantly more than that which occurs in a normal palm. Because the disease occurs on many soil types of varying fertility, they believe that the disease is not caused by any particular edaphic condition (4), nor could they find any fungus or bacterial organism associated with the frond-drop condition. Based upon their observations of field spread, binucleate cells, and the fact that the condition may occur in palms which are not of bearing age, they suggest that the disease may be the result of infection by an unknown virus (4).

Due to the lack of information concerning the cause and effect of the disease there are at present no recommended control measures.

Acknowledgements

Grateful acknowledgements are made to the State Plant Board of Florida for making this study possible and to Miss Jean Smith for assistance with the illustrations. The author is sincerely grateful for the assistance of the late Dr. Arthur Reid, Plant Protection Service, Jamaica.

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Brighter Botany Corner

Report on the promotion of growth of palm seedlings by an oil spray reminds us of the man who claimed he could always get action by greasing some palms.

From *Plant Science Bulletin* 5(3): 8. 1959

Palms on Postage Stamps

Claude Weber

The palms rank next to the cereals in importance as a source of staple food for millions of inhabitants of tropical regions. They also come next to the grass family in the number of stamps which represent members of the plant kingdom. Hundreds of stamps have been dedicated to palms, palm cultivation, palm industry, or show one or more palm trees as a feature of some scenery. It is often possible to identify the palms even if the name is not given, especially on modern stamps. A systematic review of the represented genera and species will indicate the characters which make the identification of palms possible. It is rather remarkable that in a family which includes over 200

genera and 2500 species fewer than 20 genera and 25 species appear on stamps. These are mainly of the more useful and widely distributed ones, such as the coconut, the date palm and the oil palm. Others, such as the *coco-de-mer*, are shown for a different reason, e.g. those growing in a limited area where they are more representative of a given country than those which have been introduced wherever the climate is suitable for their growth.

Postage stamps provide an excellent means for publicity and the various palms are often used for this purpose. They are shown in southern Europe to call attention to the mildness of the climate or in tropical countries to show the wealth of natural resources as well as the beauty of the landscape.

At least three species of *Phoenix* appear on stamps. The date palm, *Phoenix dactylifera*, has been cultivated for over 5000 years in southwestern Asia, where it probably is native, and in North Africa. From there it has been successfully introduced into other parts of Africa, the West Indies, California and Mexico. The date palm in cultivation possesses a slender, straight or slightly bent, more or less rough-looking trunk terminated by a crown of pinnate leaves, but when neglected or allowed to grow uncontrolled, new sprouts appear from the base, a reason date palms are often seen in clumps. These offshoots serve to propagate the trees faster than by seeding and with the security that those from a female tree will always give a female tree. In cultivation, 90 per cent of the male trees are removed. According to Hill (1), the date palms can grow with less water than any other crop. The fruits, rich in carbohydrates, are easily preserved and are the main food of the Arabs. Iraq is the main exporting country of dates. Date palms, and dates, among other tropical fruits, appear on numerous stamps of Africa and also on a few of the Antilles.

Phoenix canariensis of the Canary Islands has almost completely replaced the date palm for ornamental purposes since its introduction into the gardens of the South of France in 1864. Although La Promenade des Anglais at Nice, France, is still planted together with *Phoenix dactylifera*. The trunk of *Phoenix canariensis* is thicker, its leaves are larger and greener than those of *Phoenix dactylifera*. Since the former species does not produce offshoots, it is more favorable for decorative purposes in avenues especially in southern Europe and southern United States. A good example of this palm is shown by the French stamp issued in 1946-1948, representing La Croisette at Cannes.

Phoenix reclinata comes from the tropics of Africa. This palm is characterized by several slender trunks which tend to lean outward, and by its long leaves. It is depicted on stamps of the Belgian Congo and other African countries where it grows in masses along rivers.

Trachycarpus Fortunei, the windmill palm, with fan-shaped leaves was introduced into Europe from southeastern Asia in 1842. It is favored for its hardiness and for the attractive bright yellow flowers which appear in abundant sprays. The trunk is covered with fibers and the dead leaves persist if not cut. Two Russian stamps issued in 1948 and representing the shoreline of Sukhum and the Stalin Highway at Sochi in Crimea have good illustrations of this species.

Pritchardia pacifica, another fan-palm, is native to Fiji, and is planted in the southern parts of the United States as well as in the West Indies. It appeared on a stamp of Jamaica in 1919 representing "King's House."

Washingtonia filifera, one of the two *Washingtonia* species, is a native palm, growing wild in southern California, Arizona and in Mexico. Its fan-shaped leaves bear many filaments as expressed by its Latin name. This tall tree with a heavy trunk is planted as an ornamental in many countries of the world. It appears on a stamp of the United States, 1954 issue, representing "The Alamo."

The common palmetto, *Sabal Palmetto*, grows wild in the coastal areas of the southeastern states. It may be dwarf when growing in thickets or it may become 90 feet tall when planted in a suitable place. The common palmetto is the state tree of Florida where the leaves and leafstalks are used by the brush industry because of their high fibre content. This palm is recognizable on the United States stamp issued in 1930 for Carolina-Charleston.

The African *Hyphaene thebaica* is easily distinguishable from the other palms by its forked stems. Like the date palm it is dioecious, each tree being either male or female. Various parts of this palm are used for making mats, hats, baskets, woven bowls, rope, and building material; the hard nuts are also strung together by natives to form a weapon called *wargaji*. This palm appears on stamps of Eritrea and of Somalia.

The genus *Borassus* is illustrated by *Borassus aethiopum*. The wine made from the sap of this species is the richest in sugar of all the palm wines. It grows in Central Africa where, it is said, the elephants feed on the fruits. Dalziel (2) records: "In parts of Senegal several scores are planted at a child's birth and they serve to some extent as a dowry." It is shown growing in the savannah on a stamp of the Belgian Congo issued in 1955.

The double coconut or *coco-de-mer*, fruit of *Lodoicea maldivica*, was an object of mystery for centuries until the discovery of the area in the Maldive or Seychelles Islands in 1743 where the palm grew. This strange looking fruit first was found floating in the Indian Ocean and was thought to be produced by a tree living under water and kept by a daemon punishing with sudden death those who would attempt to approach it. The double coconut was supposed to be an antidote to all poisons and due to its rarity was very expensive in Europe or Asia, selling for up to 150 crowns each. Some kings even gave a ship for one according to Berthold Seeman (3), *Lodoicea* grows on the hill slopes and valleys of some of the Seychelles Islands but it is rarely cultivated. To obtain the nuts, sometimes weighing from forty to fifty pounds, the tree was formerly cut down, a practice which has made it rare outside a government and a private reserve. The *coco-de-mer* appeared in 1938 on a stamp of the Seychelles but unfortunately the unusual fruit is omitted.

Many genera and species are used in preparing palm wine which is obtained usually by removing the inflorescences before they open and collecting the sap in bamboo containers for fermentation.

One of the most important sources of palm wine is the pinnate-leaved *Raphia vinifera*, abundant in the tidal bayous of

4. Top row, *Phoenix dactylifera*, Israel 1959, 350 pr.; *Phoenix canariensis*, France 1946-48, 6 f.; *Phoenix reclinata*, Congo Belge 1931-37, 10 c.; 2nd row, *Trachycarpus Fortunei*, Russia 1948, 40 k.; *Pritchardia pacifica* Jamaica 1919-21, 2 d; *Washingtonia filifera*, U.S. 1954, 9 c.; 3rd row, *Sabal Palmetto*, U.S. 1930, 2 c.; *Hyphaene thebaica*, Italian Somaliland, 1954 Air, 1.20 s.; *Borassus aethiopum*, Congo 1955, 6.50 f.; Bottom row, *Lodoicea maldivica*, Seychelles 1938-41, 50 c.; *Metroxylon Sagu*, Japanese occupation of Malaya 1943, 30 c.; *Elaeis guineensis*, Nigeria 1935, 5 s. Photograph courtesy of the Arnold Arboretum, Harvard University.

5. Top row, *Roystonea regia*, Cuba 1955 Air, 12 c.; *Roystonea oleracea*, Brazil 1937, 300 r.; *Orbignya Cohune*, British Honduras 1938, 3 c.; 2nd row, *Arecastrum Romanzoffianum*, Argentine Republic 1935-51, 5 c.; *Cocos nucifera*, French Oceania, 1955 Air, 13 f.; *Jubaea chilensis*, Chile 1936, 20 c.; 3rd row, "Tree of Life," Iraq 1923, 1 r.; "Moslem leaf pattern," Pakistan 1951. 4 a.; palm branches for victor at Olympics, Greece 1937, 50 l.; bottom row, Hebrew coin with stylized date palm, Israel 1948, 3 m.; palm branch for allegory of victory, U.S. 1943, 2 c.; "Liberty Tree," Haiti 1891, 1 c. Photograph courtesy of the Arnold Arboretum, Harvard University.

the west coast of Africa. Species of this genus also give the West African piassava, a fiber used for brushes and brooms. Gambia, in 1953, issued a special stamp to show the African wine palm.

Starch is an unusual product obtained from palms. *Metroxylon Sagu*, the sago palm, stores starch in the stem. When the tree is eight to 15 years old and before it commences to flower, it is cut down and the starchy pith removed. The sago palm is mostly cultivated in Malaya and Indonesia and is both wild and cultivated in New Guinea. On stamps of Labuan, North Borneo, Samoa, etc., it is illustrated with a short trunk and large pinnate leaves.

Rattan, especially used for baskets and furniture, is produced by a few species of climbing and spiny palms belonging to the genus *Calamus*. These are so common in the jungle of the Old World that they do not need cultivation. A stamp of the Dutch Indies issued in 1932, shows "plaiting rattan."

The royal palm, *Roystonea regia*, is a native of Cuba where it is one of the commonest palms, growing from the plains to the mountains. The fruit is used for pig feed. It is easily recognized by the smooth green crownshaft rising above the stout columnar trunk and crowned by the pinnate leaves. Most of the time its bole grows straight, being slightly thickened above the middle. This palm is commonly planted along avenues in the Western Hemisphere and in Asia. Numerous stamps of Cuba and other countries of the West Indies as well as of South America and the Philippines depict the royal palm, either growing in its natural habitat or planted.

The cabbage palm, *Roystonea oleracea*, is also a native of the West Indies. Trees 110 feet high have been measured, about twice the normal height for *Roystonea regia*. The best characters to distinguish *Roystonea oleracea* from the royal palm are the leaves, which stay either horizontal or ascending instead of drooping, and the trunk which is enlarged at the base instead of at the middle. It is often planted, especially in South America. The issues dedicated by Brazil to the Botanical Gardens of Rio de Janeiro in 1937 and 1958 show how beautiful and majestic an avenue planted with this palm can be. The cabbage palm is also shown on stamps of Dominica and of the Dominican Republic where the terminal buds are used as a vegetable.

Areca Catechu produces betel nuts which are chewed by more people than any other masticatory. Although a native of Malaya, it is widely cultivated in whole Tropical Asia. Prudhomme (4) states that it is as rare to meet a coconut palm with a straight bole as it is to meet a betel-nut palm with a twisted trunk. This tree grows very tall and can be seen among coconut palms on stamps of Ceylon representing scenes of this country.

The oil palm, *Elaeis guineensis*, is a native of West Africa now introduced into tropical America because of the high concentration of oil in the fruits. Oil is expressed from both the pulp and the kernel of the fresh fruits. This oil is exported to Europe and the United States mainly from the countries bordering the Gulf of Guinea. It is used in margarine, in soap and also in the manufacture of tin plate. A wine is also made from the oil palm. This species still grows wild in the tropical forests of the

West Coast of Africa where the fruits are gathered by the natives but is also planted in groves. The oil palm is a medium sized tree reaching 45 feet in height with a slender bole. The trunk of young trees is covered with the remains of old leafstalks which fall off later, leaving a more or less smooth trunk on mature trees. The huge pinnate leaves are somewhat more graceful than those of the date palm. The inflorescences, male or female on the same tree, form a characteristic rounded mass; the male inflorescences appear on young trees a few years before the female. The oil palm appears on many stamps of those countries where it is one of the main natural resources. Thomas & Prince Island in 1948 and Nigeria in 1953 show the best illustrations of this palm.

Orbignya Cohune also produces oil. This palm, a native of Central America, is widespread in British Honduras, eastern Guatemala and Honduras. The yield of fruits is comparable to that of the African oil palm but the kernels are harder to crack and are lower in fat content. The cohune palm with a hanging cluster of fruits is represented on a stamp of British Honduras in 1938.

The coconut, *Cocos nucifera*, is the best known of palms, being one of the most important economic plants. Its origin is still doubtful, but some botanists believe it to be of the Malayan Archipelago. Growing near the sea shore, and the nut being especially well adapted for transportation in salt water, the coconut palm might have spread by marine currents from one island to another. Because it is such a useful plant, it has been widely disseminated and introduced by man into many countries. The coconut is now planted everywhere that it can survive, even at altitudes of up to 5000 feet. Trees can reach a height of 100 feet; the slender bole is usually arching, with a more or less swollen base. The numerous pinnate leaves are drooping and the fruits are borne in clusters. Coconuts are exported to temperate regions mainly in the form of copra or dried coconut meat which is obtained by dividing the fruits in two halves and by drying the kernel under the natural heat of the sun or by fire. The desiccated coconut meat is widely used by industry as a source of oil as well as a component of delicatessen. Several stamps have been designed to illustrate either the coconut palm or the preparation of copra, especially those from India, Ceylon, the Philippines and Indonesia.

Arecastrum Romanzoffianum, the queen palm, belongs to a genus related to *Cocos*. It is a graceful palm with large pinnate leaves which grows wild from central Brazil to Argentina. A Brazilian stamp issued in 1939 elucidates this species, as does also one of the Argentine Republic picturing the Iguazu Falls.

Jubaea chilensis, the *coquito* of Chile, occurs farther south on the western side of South America than any other palm and is still abundant as a wild tree in Central Chile. For cultivation the sap is extracted from the trunk, but in order to collect the sap the tree must be cut down. A good tree may deliver up to ninety gallons of sap, which, as maple sap, is concentrated by boiling; the concentrated sirup is called *miel de palma*. This tree possesses a very wide and straight trunk crowned by pinnate leaves. In 1936, Chile issued a stamp representing the coquito palm growing in the mountains.

Palms have played such an important role in the daily life of peoples for centuries or even thousands of years as in the case of the date palm that many legends have become associated with them. The date palm was introduced to the region now known as Israel in ancient times. It is represented on a stamp of that country with symbols of Rosh Hashonnoh, the Jewish New Year, and on stamps picturing old coins. One of the oldest symbols, the "Tree of Life," has also found application among postage stamp designs. For the Assyrians (ca. 2000 B.C.), as we find on their reliques, the Tree of Life was composed of grape vines climbing on a date palm. Iraq in 1923-25 and Ukraine in 1923 issued stamps showing such a pattern.

Palm branches were a symbol of victory for the Greeks and for the Romans. A stamp issued in Greece in 1937 shows a victor at the Olympics acclaimed by a crowd waving palm branches. It is still used in this sense on stamps of the United States, Cuba, Brazil, Colombia, Italy, etc. With the coming of the Christian era palm branches were adopted as a symbol of martyrdom. Thus we find them in the hands of martyrs or in the coats of arms of destroyed cities, such as Strasbourg and St. Etienne, France.

The date palm is also bound to the Moslem religion. Mohammed compared it to man, for the sexes are separated on different trees. In the Koran he states that the date palm is blessed among trees as the Moslems are among men. Since reproduction of plants and animals is forbidden in this religion, the palm tree can only appear in a very stylized manner, as on a stamp of Pakistan of 1951 depicting a "Moslem leaf pattern."

Stylized palm trees appear also on coats of arms of different countries or towns: e.g. Zanzibar (date palm), British Honduras (cohune palm), New Caledonia (coconut palm), Haiti (cabbage palm). Haiti's "Liberty Tree" is a stylized cabbage palm surmounted by a Phrygian cap, a symbol of the French Revolution in the latter part of the 18th century. The wine palm (?) represented on the seal of Liberia, a republic founded in 1822, signifies another historical event.

In the foregoing paragraphs I have attempted to give an overall picture of the great diversity by which palms are employed as postage stamp designs. I have, by no means accounted for all of the stamps, for it would have made this article too long and it would also have been superfluous, since a handbook listing all plants represented on postage stamps is being prepared by members of the American Topical Association for publication in 1960. (For information, write A. T. A., 3306 N. 50th St., Milwaukee, Wisconsin.) This article was intended to show and to convey the intellectual satisfaction one may receive either in combining botanical and ethnobotanical studies with philately, or in finding lasting values in artistic designs.

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Royal Palm Promenades

W. H. Hodge

Few vistas in the tropics are more majestic than those created by symmetrical files of mature royal palms growing along promenades or avenues. No other genus of ornamental palms lends itself quite so well to such plantings. L. H. Bailey summed up the impact they make when he wrote (*Gentes Herbarum* 3:356. 1935) "Roystoneas are stately noble American trees, for height and airiness and attractive proportions probably not equalled in the palms. The clean stone-gray boles are arresting objects by day or by night."

Especially favored as avenue trees are two West Indian species, *Roystonea regia*, the Cuban royal palm, and *Roystonea oleracea*, the royal palm of the Caribbee Islands. The former is mostly planted as formal avenue species in Florida, Cuba and Central America; the latter has been distributed more widely by man and fine plantings are to be seen not only in this hemisphere, but also in the Old World where it is more familiar under the name of cabbage palm. Three outstanding promenades of royals are shown in the accompanying photographs. (Cover, figures 6-7.)

Most celebrated are the two Alamedas de Palmeiras growing in the Botanic Garden at Rio de Janeiro. The one figured is best known. It forms a promenade 700 yards long lined with a total of 128 palms planted 64 to a side.

Measurements taken in 1942 showed the average height of these trees to be 98 feet and the average diameter to be 40 inches at the swollen base. *Roystonea oleracea* is the species planted. Though originally native to the Lesser Antilles, seed of this species was apparently brought to the Rio Garden around 1810 by way of Portuguese Macao.

Another beautiful avenue of Caribbee royals is to be seen half-way around the world in the famed Botanic Gardens at Peradeniya, Ceylon. This planting, or Cabbage Palm Avenue as it is called at Peradeniya, is made up of much younger trees, set out in 1905. Here the number of palms is about the same, but the individual trees have been planted closer than at Rio.

Although the native royal palm is appreciated as an avenue tree in Cuba, one of the finest plantings of *Roystonea regia* known to the writer is the one figured, located in the Lancetilla Experiment Station of the United Fruit Company near Tela, Honduras.

It is probably no coincidence that the best promenade plantings of mature royal palms are found in the doldrum area of the tropics away from the destructive forces of hurricanes and typhoons. Not that these trees are weak, for as Bailey indicates in the account referred to above, "anchored by a dense mass of cord-like roots . . . they withstand great stress of wind."

Although these two species of superb avenue palms are frequently confused, they are easily separable on the basis of bole or trunk characters. In *Roystonea oleracea*, the trunk is broadest at the base and then tapers gradually upwards like a pillar or column. The trunk of *Roystonea regia*, on the other hand, is broadest near the middle, tapering from that point to form narrower portions be-

6. Promenade planting of *Roystonea regia*, Lancetilla Experiment Station, Tela, Honduras, 1950. Photograph by W. H. Hodge.

1950.

7. Promenade planting of *Roystonea oleracea*, Botanic Gardens, Peradeniya, Ceylon, 1958. Photograph by W. H. Hodge.

low and above. From the accompanying illustrations one might infer that the trunks of *R. oleracea*, whether in Brazil or in Ceylon, are more prone to growth of epiphytic lichens, to be seen spotting the trunks.

The Caribbee royal is a superior subject for promenades and avenues if the impressiveness of maximum height is desired, for it grows to be 125-135 feet tall. The Cuban royal usually is a much shorter tree, probably averaging half the height of the Caribbee royal and seldom obtaining heights of as much as 100 feet.

Palms in the Landscape

DESMOND MUIRHEAD

Landscape Architect of Desmond Muirhead and Associates, Vancouver, British Columbia, and Phoenix, Arizona.

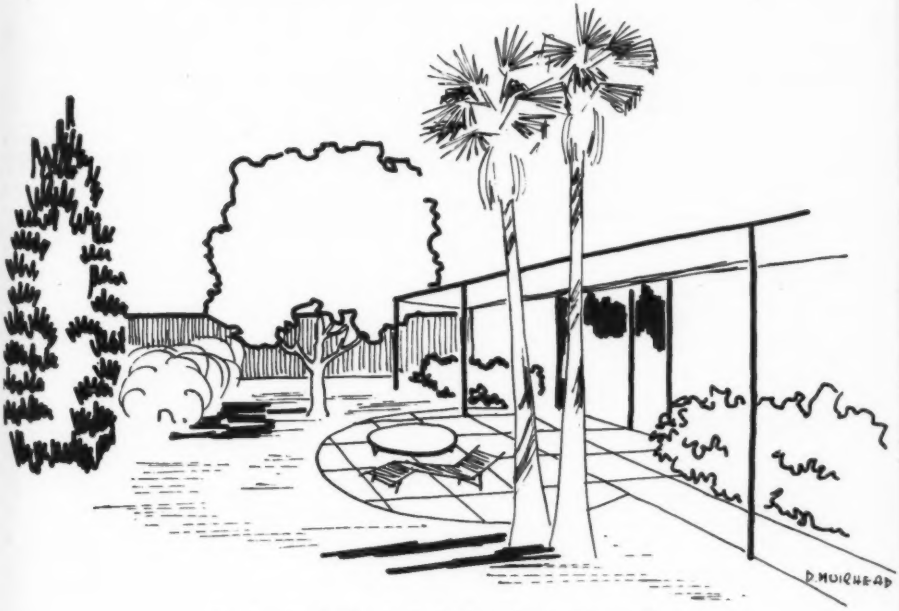
Before the use of palms in the landscape can be properly assessed, it must first be established how palms fit into the art of landscape design. For this we must also know something about style in landscape architecture.

It has often and rightly been pointed out that landscape design is an art and must be approached as an art. What is usually overlooked is that landscape design is the greatest of all arts, the only one with time on its side as a factor in the design process, and an art that denotes the full flowering of a rising culture.

During the Seventeenth Century, Francis Bacon in his essay "On Gardens" wrote "that when ages come to civility and elegancy, men come to build stately sooner than to garden finely; as if gardening were the greater perfection." All the present day signs point to a new Golden Age in landscape architecture.

Until about twenty years ago, there were only two styles of landscape design in vogue in America. These were the formal style (figure 20) derived from the axial symmetry of the great French and Italian gardens; and the naturalistic style derived from the easy flowing contours of the English landscape gardens.

8. A pair of palms in the front garden.

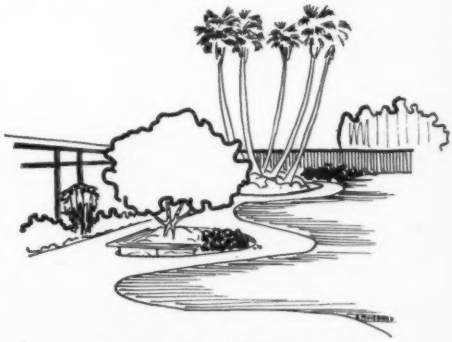


9. A pair of palms in the back garden next to a patio.

Although many fine examples of both these styles exist in this country, the limiting of a design approach by repeating elements mirror-like on either side of an axis, or alternatively the elimination of all man-made structures, has now been discarded. It has been found that asymmetrical arrangements of formal gardens are possible; at the same time there is no reason why structures cannot be combined successfully with informal plant groupings.

Today, there is complete freedom in design. Abstract pattern usually provides the skeleton of the garden with trees and shrubs the flesh and clothing. The placement of plant material is therefore often final and is of great importance to the design. Figures 12 and 14 indicate the release from tradition which the contemporary trend has given to palms. In the meantime, so-called naturalistic design has too often been replaced by the static dullness of the gardenesque-patio-informal arrangement so commonly displayed in magazines, or by no design at all which is sometimes preferable.

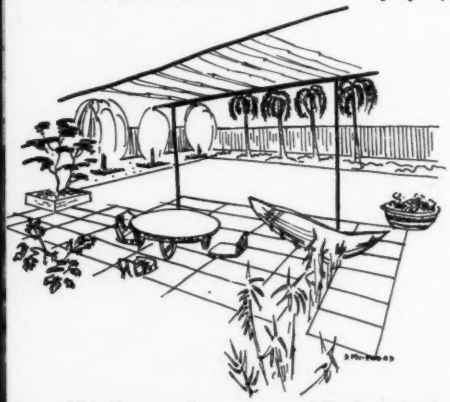
Whether used in the mass (in subdivisions, for instance) or as individual specimens in home gardens, careful arrangement of palms is one method by



10. Palms used in groups.

which form and coherence can be returned to landscapes. First the designer must seek a fresh outlook. Then the spaces, large and small, must be moulded by the use of palms in combination with other plant forms, paving, water, and structures so that every glistening frond and textured trunk together with every brick and blade of grass has a cumulative effect on all who pass through the space. An awareness of these forms and colors is brought unconsciously to the onlooker so he is thrilled, delighted, stimulated by his surroundings. He feels there is no space quite like the one he is in at the moment.

11. Palms define the limits of a property.



12. Queen palms are essentially formal—they look their best in rows, harmonizing beautifully with bamboo, *Melianthus*, *Albizzia*, and pepper.

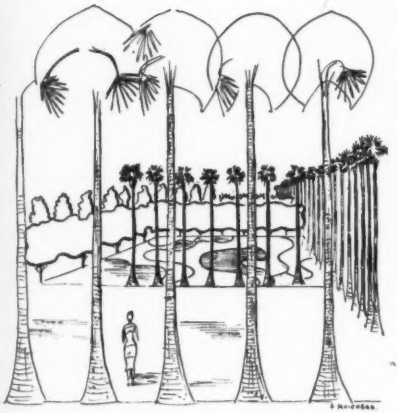
Certain experimentation may be in order to achieve the relaxed, if often chance, effect of so much home planting. With larger landscapes, plants so permanent and dominating as palms should be arranged only by the best and most practical landscape architects available,

13. Date palms are always interesting in groups, especially when of different heights.

for the landscape architect has the background and the training to consider the more intimately aesthetic and esoteric use of palms. When working on a large scale he most often uses palms in groves or in lines or in rows.

Palm Groves in Landscaping

Groves are usually relics of old commercial orchards in which clearings may be made for buildings. Such groves make excellent unifying elements for any large scale landscape planning. The more graceful palms such as coconuts make the best groves. In fact, coconuts and grass by themselves make a most restful and beautiful landscape. Old date groves provide a fine sense of shade, shelter and space. Smaller groves can be created with nearly any type of palm. Palms with stiff upright trunks like dates



14. Palms used as space dividers.

or queen palms should be spaced well apart (figures 12 and 13) but coconuts or *Washingtonia robusta* may be closely planted or may even be placed in clumps in the same hole (figure 10).

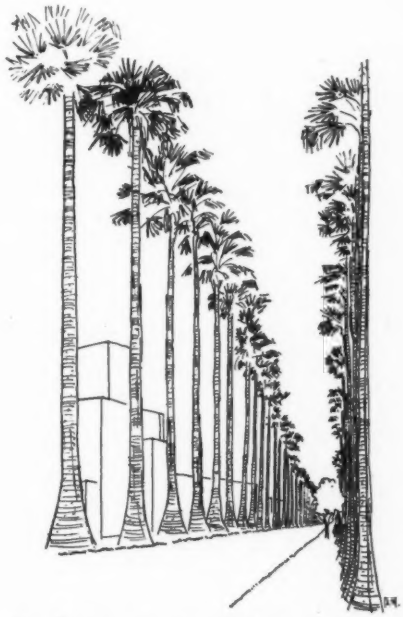
The Use of Palms in Lines

If we analyze any man-made or man-altered landscape, we are bound to conclude that the greatest single impact from this landscape seen at ground level comes from a block or a line of trees. Great lines of *Eucalyptus* and Monterey cypress are used as windbreaks in California; cottonwoods, tamarisks and fan palms in Arizona divide up rolling fields of artichokes and cotton, weaving a foliage texture into the landscape and providing patterns of space in themselves powerful and unified. Most of these effects are fortuitous but this does not mean they cannot be planned. Surely planning such effects is where the art of the landscape architect is important.

Starting from an arbitrary pattern provided by the division of land into field and meadow, a conscious space-frame can be established with palms, *Eucalyptus* and other trees which suggests a huge woven tapestry from a distance and at close quarters is an impressive measure of vertical space. A smaller scale example of this effect is shown in figure 14.

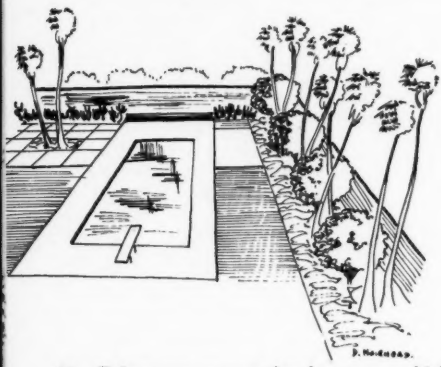
In the agricultural landscape, the point and counterpoint of blocks, groves and lines of palms and other trees provided by street, hedgerow, home and woodland make possibly the greatest and certainly the most stimulating man-made landscape in existence.

Lines or avenues of trees leading to mansions or public buildings or bordering drives or streets are probably as effective when planted with palms as with any other type of tree. Palms with straight trunks are necessary for this type of planting. Royal palms, *Wash-*

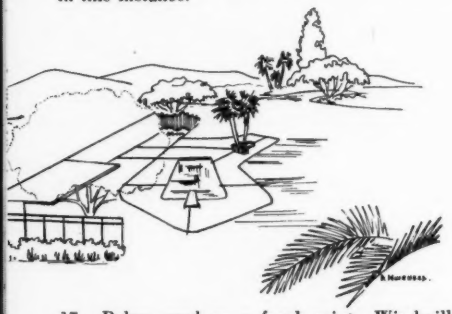


15. Palms are unequalled as impressive borders for avenues, streets, or paths. This double row of *Washingtonia robusta* is by far the finest architecture on the campus of Arizona State University.

ingtonia filifera, W. robusta (figure 15), queen palms, date palms, all make excellent avenues. Each successive tree combines impression with impression until the final result is an inspiring soaring mass of trunks and waving fronds with feet in the ground and heads in the sky. Even the temporary nuisance of fruit dropped in season cannot mar the beauty of such a landscape.



16. Palms are among the few trees which look well alternated with other trees—citrus in this instance.



17. Palms used as a focal point. Windmill palms and Senegal dates create a surprisingly tropical effect in combination with *Albizzia*, silk oak and carob.

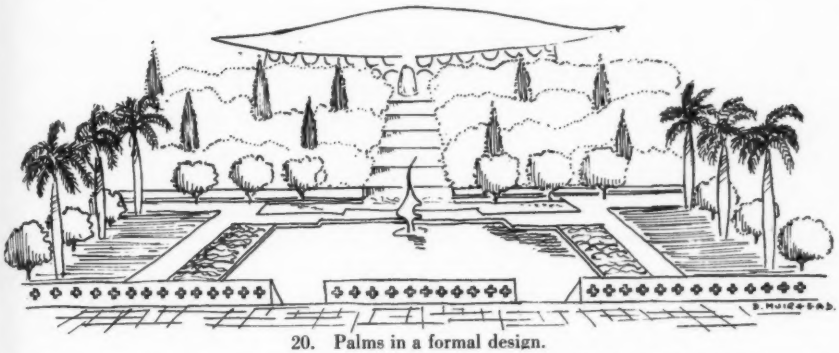
18. A *Sabal* palm and *Chamaerops humilis* used as garden sculpture.

In subdivisions where houses are so often monstrously similar, street planting such as that shown in figure 21 can break monotony and can eventually provide a street scene far more stimulating than the houses. Home owners can select one or more varieties of palm with one or two complementary species such as Mexican fan palm *(Washingtonia robusta)* and olive trees as shown. Other good groups might be queen palms, *Thevetia*, and giant bamboo, or Mediterranean fan palm, palo verde and Aleppo pine. These need not necessarily be the only trees on the street, but they provide an arresting framework into which other trees may fit comfortably without the untidy spot planting too often found in subdivisions.

Planting with Palms on a Small Scale

The scale of the home garden, of school grounds or the neighborhood park is more intimate and human than that of field and forest. Larger, taller palms can again be used successfully as space dividers. Lines and rows may be used to make parks and gardens appear large with vertical walls of space. Clumps or groups can be repeated for effect or at strategic points near the perimeter of areas to indicate the extent of the property by the use of vertical accent.

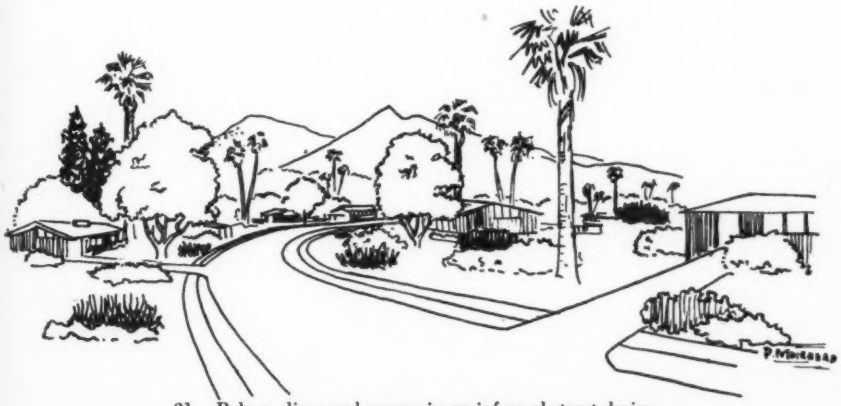
19. Design the planting in abstract first.



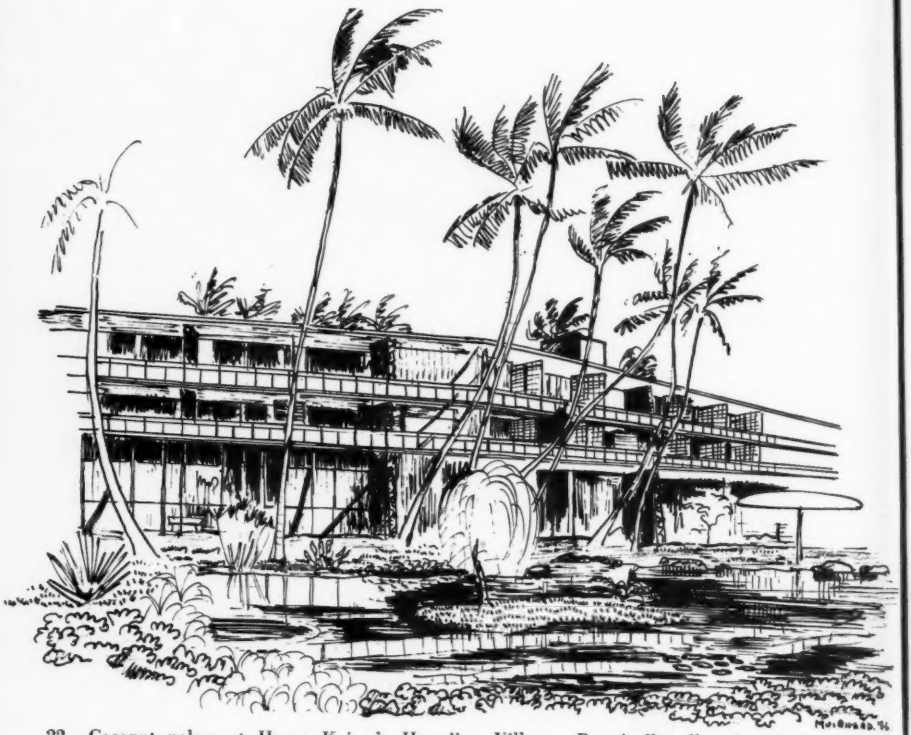
20. Palms in a formal design.

Palms can also be used as integral garden decoration, much in the same way that sculpture should be used (figure 18). This is especially true of the smaller palms like *Chamaerops humilis* and slow-growing palms like *Butia capitata*. In an architectural setting, the last two and species of *Sabal* and *Erythea* are pure garden sculpture. *Chamaerops* and trunk-producing species of *Sabal* are very effective against walls and screens, especially the new grilles which are becoming so popular. In the tropics or warmer subtropics, Fiji fan palms (*Pritchardia*), *Chrysalidocarpus*, *Latania*, and fishtail palms (*Caryota*) provide specimens of outstanding beauty. The Mexican blue hesper palm (*Erythea armata*) with a white wall behind it makes a striking accent by the entrance path.

On a very small property, only a few palms can be accommodated or the effect is overpowering. In desert oasis-type plantings, however, even Canary Island dates can look well when they are toned down by the surrounding *Eucalyptus*, ash, pines, and palo verdes which make such fine island homesteads around some of the older houses in Arizona. But where shade is not needed so desperately, the small sculptural palms are preferable.



21. Palms, olives and yuccas in an informal street design.



22. Coconut palms at Henry Kaiser's Hawaiian Village. Practically all palms look well in drifts or groves.

Whatever the size or project, palms are the most potent landscape material available. If they are used wisely and well, the future appearance of the community or home can be impressive.

The Philological Origin of Areca and Catechu

by C. X. FURTADO,
Botanic Gardens, Singapore.

Apropos H. E. Moore's note in *Principes* 3:47, 1959, on the correct name for the betel palm, the following might be of some interest to historians or philologists.

When the early Portuguese came to India, their first contacts were with the people of Calicut and Cochin on the Malabar coast of India, in a state now known as Kerala. As a result of these contacts many words were adopted by the Portuguese from the Malayalam language (spoken commonly by the people of these regions) rather than from the Kanarese language (spoken in the regions lying to the northern frontier of Kerala) or from the Tamil (spoken in the regions lying to the east of it) — words which later travelled eastwards to Europe and westwards to Malacca. Curi-

ously enough the Portuguese called the people of the Malabar and the Konkan coast of India as Kanarese *(Canarim)*, though this term was more often applied indiscriminately to the Christian converts of the West Coast of India.

Now *adeka* or *adaka* is a Malayalam name for the betel nut, a name still used in the country and also mentioned in the old dictionaries (e.g. Balfour, *Cyclopaedia of India*, ed. 2, 1, 1871; Watt's *A Dictionary of the Economic Products of India* 1, 1889). One of the earliest references to *Areca* is in the letter written by the King of Cochin in 1510 to Alphonso de Albuquerque recommending him to send ships to Choromandel and Malacca to bring *harequa*, a word which later in 1513 is spelt as *areca* (plural *arecas*), (Albuquerque, *Cartas* 4:43. 1884). Varthema, an Italian who had visited Malabar in 1510, wrote "When they eat the said leaves [betel], they eat with them a certain fruit which is called *coffolo* and the tree of the said *coffolo* is *Arecha* . . . " (*The Travels of Ludovico di Varthema* 144, Hakluyt Society, 1863). Obviously Varthema's informant was an Arab trader who would call the fruit *faufel* or *faufel* (=*coffolo*) which was supplied by the natives of Malabar as *areca*. Since *h* after *c* is used in Italian to give *c* a hard sound like *k* and since *c* is always hard when followed by the vowel *a*, *o* or *u*, the *h* in *arecha* is superfluous and the word should have been written *areca*.

In 1516 Duarte Barbosa (*Livro* p. 347) mentions that there is "a fruit of the size of the nut which they call *Areca* and eat together with the betel leaf." In his *Coloquios* XXII (1563) Garcia da Orta states that "in Malabar they call it *pac*, and the Naires, who are the knights [living in Kerala], call it *areca* whence the Portuguese have taken the name, being the land first known to us, and where it abounds."

It may be noted that certain syllables in Indian languages are difficult to write phonetically with the Latin alphabet. Among these are those which have consonants pronounced half way between *d* and *r* and so it is the early Portuguese who wrote *areca* where the modern philologists might have written *adaka*, *adeka*, *addeka*, *addaka*, *adakka*, etc. There is no need therefore to go to the Kanarese *adeki*, *adike*, etc. when the word was directly taken from Malayalam language.

There seems to be some confusion about the meaning of the word *adeka*, a fruit much used in the Hinduist liturgy, and in social intercourse. I have not been able to find exactly what it means. Cooke (in Yule & Burnell, *Hobson-Jobson*, ed. 2, 1903) quotes Caldwell who derives it from the Tamil *adai* (closely packed in cluster) and *kay* (fruit) but this does not seem to agree with the various stages of fruit development given by Rheede (*Hortus Indicus Malabaricus* 1: 9-10. 1678). According to this *Hortus*, the Malayalees (the people of Malabar who speak the Malayalam language) distinguished five stages in the development of the fruit of the *caunga* (*Areca* palm). In the first stage the seed consists of a good deal of soft astringent pulp and some water (*tannipaina)*, in the second all the water has been replaced by soft pulp (*schalemba paina*), in the third the pulp is slightly hardened and has a whitish core, (*aria decca* [*ari-adecca*]), in the fourth the seed pulp is harder (*adecca*) and finally the seed is very hard and its husk is golden yellow outside (*paleca*). This would suggest that *ecca* or *ca* has something to do with the seed that is eaten as a masticatory. *Ari-adecca* actually

means "small adecca". Could it be that *adecca* is again a combination of *ari-ecca* or *ari-ca* meaning "small or half-ripe *ecca* or *ca*" that is commonly found on the market, while *pal-ecca* or *pale-ca* is a fully ripe *ecca* or *ca* used for sowing?

Now Gowda quoted by Moore seems to have confused some explanations given by Garcia da Orta and others, for actually *Nair*, and not *adeka*, means "a knight, cavalier, or leader" corresponding to the word *nayaka* or *nayake* in the neo-Aryan languages like Konkani and Ceylonese (Singhalese).

As to the origin of the word *catechu*, literature available is rather confusing. In *Useful Plants of India* 7, 1873, Drury derives the word from *cate*, tree, and *chu*, juice, without indicating the language. In *The Commercial Products of India* 8-14, 1908, Watt holds the view that the word has been compounded from the Tamil *kati*, extract, romanized by Garcia da Orta (1563) into *cate*, and *chuana*, to distil. Markham (Garcia da Orta's *Colloquies*, 194, 1913), states that *catechu* and *cutch* are corruptions of the Indian name *katha-kekkal* for *Acacia Catechu*, *katha* meaning "strong." Dalgado (*Glossario Luso-Asiatico* 1, 1919) makes *catechu* a compound formed of *cate* and *cacho*, the two words used by the Portuguese of the 16th centurly in the East to indicate the extract of *Acacia Catechu*. Going to the root of these words, he states the Sanskrit *kvatha*, extract, gave the Konkani-Marathi form *kat* and the Dravidian and the Malay *kachu*, from which the Portuguese lusitanized the two above-mentioned words. In *Verklarend Woordenboek* (1936) Backer revives the discarded view (Watts, *op. cit.* 39. 1889) that makes *catechu* a corrupted compound of the Cochinchinese words *cay cao*. He does not state when or by whom the transformation was made; his suggestion is based apparently on the mistaken belief that *catechu* was first employed to name *Areca Catechu*, for the Indochinese floristic works mention *cay cao* or *cay cau* as the common vernacular name of *Areca Catechu*. The probable reason why early writers were inclined to associate *catechu* with Cochinchina appears to lie in the evolution of the word Cochinchina itself. Annam's capital was known formerly as *Keche* or *Kechu*. Owing to many variations in the pronunciation of this word among the traders of the times, the early Portuguese wrote it as *Cacho*, *Cauchi*, *Coche*, *Cochi*, *Cochin* and *Cochim*. Later in order to distinguish it from Cochin in India, the Portuguese named it Cochin-China, meaning Cochin near China. But long before the Portuguese became commercially acquainted with this country, they knew the *cacho* and *cate* extracted in India.

On the other hand the Portuguese writers of the early 16th century stated that the drug *cacho* came from Cambaya and from the neighboring regions, and was a very valuable article of traffic in Malacca and China as well as in Arabia, Persia and Ormuz (cf. Duarte Barbosa, 1516; Castanheda, 1552; etc.). The name adopted for the drug must have been widely current in trade and in all probability originated in places near Cambaya where the Gujerati language is spoken. Later the Portuguese used also the word *cate*, which is actually the neo-Aryan word widely used in India for the finer quality of *cacho* eaten with betel leaves; and Garcia da Orta in his *Coloquios* (1563) states that the word *cate* is also widely used in Arabia, India and elsewhere, though in Malacca the

form *cato* is employed (the last *o* being a short *u* as usual).

Obviously the early Portuguese pronounced the *ch* in *cacho* in the old way retained in many a Portuguese patois in the East and until recently also in Goa. *Ch* then is equivalent not to *sh* but to *tch* in English and *tj* in Dutch. Further, the final *o* would be a short *u*. This would make the Portuguese *cacho* almost equivalent to the English cutch, a name usually given as the Gujerati name for catechu (cf. Balfour *op. cit.*) and perhaps the name "Gulf of Cutch" in Gujerat, India, points to the original source of the name and the extract *cacho* of commerce. Actually Balfour (1871) and Watt (1889) give *catch* as the Portuguese name for cutch, but obviously this is only their phonetic rendering in English of the Portuguese word *cacho* which they do not mention. This also confirms the view that the Portuguese in the East were in the habit of pronouncing *cacho* as if it had the letter *t* before the last syllable and as if the last *o* was semi-silent or equivalent to a short *u*.

Many lexicons and commentators give *kachu*, *kassu*, and other variations as the Dravidian names of catechu, but it is necessary to verify whether these names, like those of many other articles of the olden days commerce, have not been introduced in the Tamil, the Kanarese and the Malayalam languages through the Portuguese influence in Malabar. The early Portuguese writers did not mention the drug as being an important article of trade in Malabar; and the fact that the Portuguese lusitanized the neo-Aryan word *kat* (of which *kutch* is a Gujerati form and *kati* the Tamil one) into *cate* and *cato* for the catechu used in the social intercourse in India and Malacca respectively (cf. Garcia da Orta) suggests that *cate* had no other special word in the common (Dravidian) languages of Malabar where the Portuguese were for some years, before they made their headquarters in the Aryan language country of Goa.

Early Portuguese writers were quite definite that *cate* or *cacho* was a plant product from the regions of Gujerat in North-West of India, and it was an imported article in Arabia, China and Malacca. Later attempts to find a cheaper substitute brought the Malaysian gambir into commerce. However the so-called Bombay catechu mentioned by some writers (cf. *Wealth of India*, 1, 1948) is actually an extract (often called kossa) that remains when preparing betel nuts for chewing, but apparently this has never been an article of commerce and was not called cutch in the olden days. It is used also in flavouring and colouring inferior *Areca* nuts (Watt, 89. 1908), and is preserved for the following year's boiling (*Wealth of India*, 1: 112. 1948).

However since the Portuguese pharmacists did not introduce the drug into Europe (cf. also Garcia da Orta for reasons), *cacho* did not become known to the European pharmacists except nearly a century after Garcia da Orta, when it began to be imported as a mineral from Japan. According to Flückiger and Handbury (*Pharmacographia* ed. 2: 241. 1879), catechu was mentioned in about 1641 "in several tariffs of German towns, being included in the simples of mineral origin." Though gambir may have also been taken to Europe, what was then imported into Europe from the Far East was the drug *cacho*, not its finer form *cat* eaten with betel leaves. Now, though *cacho* in the old Portuguese and cutch

in English would give the Germans *katchu* to be latinised into *catechu*, it is more probable that the Germans latinised as *catechu* the name given to the drug by the Japanese. Since in Japanese all consonants excepting *n* have to be followed by a vowel and all the alien words with a final consonant that is not an *n* have to end with *u* when rendered phonetically in Japanese, it follows that *cacho* as pronounced *catch* or *catchu* (the name widely employed in the East for the drug in trade) would become *catechu* in Japanese. In some languages of Latin origin the *catch* or *catchu* might have been romanized as *catichu* or *catuchu*, but such renderings would have distorted wholly the name in the Japanese language where *ti* and *tu* sounds become *chi* and *tzu* respectively. This Japanese influence in the latinization of the word by the Germans of the 17th century cannot be disregarded since the Germans were not acquainted with the previous literature on the subject and imported it as a mineral native of Japan obviously under the name given to it by the Japanese.

Apparently Johannes Schröder was the first person to coin *terra japonica* as an alternative name to *catechu*. In the earlier edition of the above-cited work (1874 ed. 1) Flückiger and Handbury had referred to Schröder's *Pharmacopoeia Medico-Chymica*, Lyons, ed. 4, 1654, as the earliest reference to *Catechu seu Terra japonica;* but in the second edition of their work (ed. 2: 241. 1879), they referred to the German tariffs of about 1641 and to Schröder's *Pharmacopoeia Medico-Physica*, Ulmae, lib. iii: 516, 1649 (with a Preface dated Frankfurt A.D. 1641). It might be useful to requote Schröder's passage:—

"Est et genus terrae exoticae, colore purpureum, punctulis albis intertextum, ac si situm contraxisset, sapore austeriusculum, masticatum liquescens, subdulcemque post se reliquens saporum, *Catechu* vocant, seu *Terram japonicam* . . . Particulam hujus obtinui a Pharmacopoeo nostrate curiosissimo Dn. Matthia Bansa."

According to Watt (1889 & 1908) both gambir and catechu were imported into Europe indiscriminately as *terra japonica*, but Cleyer exploded the mineral notion of these substances by republishing in 1685 Garcia da Orta's account of the preparation of the extract from plants. Cleyer also tried to classify the different kinds of catechu. Though it is possible that betel nut chips prepared for chewing might have also been introduced into Europe mistakenly as catechu, there is no evidence that any extract of betel nuts was ever an article of trade in the seventeenth and eighteenth centuries.

It might be recorded here that in his translation of *Coloquios* (1563) of Garcia da Orta, Markham *(Colloquies* 194. 1913) makes the author as the first person to use the word *catechu;* but this is obviously a *lapsus calami* for *areca*, which is found in the place in the *Coloquios* edited by Conde Ficalho (1891 p. 327).

Since Linnaeus followed the belief that catechu was derived from the betel nut, he coined the binomial *Areca Catechu*. Pointing out the error regarding the source of catechu, Loureiro (*Flora Cochinchinensis* 568. 1790) considered the specific epithet inappropriate and misleading ("non solum improprium sed erroneum") for the plant and so he suggested what he considered a more distinctive substitute name, *Areca hortensis*, which of course has no status

under the International Code of Botanical Nomenclature. But these remarks of Loureiro should be sufficient also to show that *catechu* is not derived from the Cochinchinese words *cay-cao*, the common name of the *Areca* palm, for Loureiro had made a deep study of the Cochinchinese language and economic products so as to compile a dictionary of the language (Merrill, A Commentary on Loureiro's "Flora Cochinchinensis," in *Transactions of the American Philosophical Society* 24: 2. 1935).

PALM LITERATURE

Cadogan, L. *The Eternal Pindó Palm and Other Plants in Mbya-Guaraní Myth and Legend*. Mexico, 1958.

Leon Cadogan is a well known explorer of the myths and legends of the Paraguayan tribes of the Guaraní. His pamphlet about the *pindó* palm (*Arecastrum Romanzoffianum*) would certainly be of interest for the readers of PRINCIPES.

The *pindó* palm is the most prominent tree in Mbya-Guaraní. In the Creation Myth, five *pindó* palms uphold the universe, there being a *pindovy* (eternal palm) under Yvy Mbyté (the center of the earth); another under Karaí Ambé (the abode of Karaí the god of fire, the East); another under Tupa Ambo (the abode of Tupa, the god of rains, the West); one at Yvytú Ymá Rapytá (the origin of the primitive wind, the South) and another at Yvytú Porá Rapytá (the origin of the good wind, the North).

In the Myth of the Deluge, the hero Taparí creates a *pindó* palm with two leaves, one for himself and one for his aunt with whom he had sinned. It towers above the waters and enables the pair to enter the Elysian Fields of the Guaraní mythology.

The prominent place occupied by the *pindó* palm in Mbyá-Guaraní mythology is but natural. *Pindó* leaves are used for thatching the Mbyá's dwellings; the tender tops provide him with an excellent vegetable; the fruit, pounded and mixed with water, provide him a nutritious beverage; the kernel is edible; the roots are used in medicine as a styptic; the trunk serves as a breeding ground for edible larvae, a source of fat and oil.

Life for the Mbyá would be inconceivable without the *pindó* palm. It is therefore but natural that the Universe should rest upon the eternal *pindovy* and that an eternal pindó should tower above the fountain at Yvy Mbyté where the father of the Mbyá race was miraculously begotten.

DR. M. MICHALOWSKI

Palm Fruits As Bird Food

The fact that palm fruits serve as food for wild life is well known at the Fairchild Tropical Garden in Coral Gables, Florida, where squirrels and other rodents thrive on them. Macaws which fly over from the nearby Parrot Jungle also feast on the palm fruits in the garden. Other birds, as shown in recent literature, also enjoy the fruits of palms.

The palm-nut vulture (*Gypohierax angolensis*) of West Africa prefers the fruits of the oil palm *(Elaeis guineensis)* over all other forms of food. A definite relationship between the distribution of the oil palm and that of the palm-nut vulture has been shown. This bird knows just how to pull the fruits from the cluster and, holding the fruit with one foot, to strip the flesh from the kernel. It is this brightly colored flesh which the bird eats. In one location where no oil palms occur, the bird lives on the

fruits of *Raphia vinifera*. With increased planting of the oil palm for commerce, the palm-nut vulture is also on the increase.

The *guacharo* (*Steatornis caripensis*) of South America is another bird that includes palm fruits as a major portion of its diet. The *guacharo* is a very unusual nocturnal bird that lives in caves during the day and leaves only at night to feed, possibly taking the fruits of *Jessenia oligocarpa* while on the wing.

References concerning these birds and their habits may be found in the following articles:

Ingram, C. 1958. Notes on the Habits and Structure of the Guacharo *Steatornis caripensis*. *Ibis* 100: 113-119.

Thomson, A. L. and R. E. Moreau. 1957. Feeding Habits of the Palm-Nut Vulture *Gypohierax*. *Ibis* 99: 608-613.

R. W. READ

A Study of the Peach Palm

Patiño, Victor Manuel. 1958. El Cachipay o Pijibay (*Guilielma Gasipaes* Bailey), y su Papel en la Cultura y la Economía de los Pueblos Indígenas de América Intertropical. *América Indígena* 18: 177-204, 299-332 [The Cachipay or Pijibay and its Role in the Culture and the Economy of the Indigenous Peoples of Intertropical America] reprinted as "El Cachipay o Pijibay en la Cultura de los Indígenas de América Intertropical" by the Instituto Indigenista Inter-americano, México, D. F., Ediciones Especiales Número 39.

Dr. Patiño is a native of the Valle del Cauca in Colombia who became interested in the peach palm, as the cachipay is more commonly known in English, during a trip through South America. In the first part of this study, he has brought together a bibliography of the history of the palm in colonial times arranged according to a geographical sequence, with notes on the present distribution of the species. With the above is an ethnobotanical study of harvest festivals among some of the Indian tribes that have long used the fruit, of myths, religious significance and folklore.

The second part provides an account of the historical and traditional uses of the palm for construction, weapons, food, beverage, and fodder. Although written in Spanish, an English summary precedes each part and the whole is illustrated with photographs. A list of 157 references concludes this valuable and interesting study.

Index of American Palms, Plates

Dahlgren, B. E., "Index of American Palms, Plates," *Field Museum of Natural History, Botanical Series* 14 (Publication 863): pls. 1-412. 30 January 1959. Published by the Chicago Natural History Museum, Roosevelt Road and Lake Shore Drive, Chicago 5, Illinois. $10.00.

This companion to Dahlgren's "Index of American Palms" (*Field Museum of Natural History, Botanical Series* 14 (Publication 355). 1936) consists of photographs of type-specimens and historical specimens of American palms in European herbaria. The specimens are principally those on which Liebmann, Martius and Hermann Wendland based new species of palms; the photographs were made by J. Francis Macbride chiefly in the herbaria at Copenhagen, Hanover (Herrenhausen) and Munich with a few from Vienna and Paris. Palm specimens at Hanover and Vienna were destroyed during the war. The photographs, therefore, now substitute for the specimens.

The colotype process plates were printed many years ago, then laid aside pending possible need for rectification and only recently made available to the general public. As detailed botanical studies of palms continue, the need for occasional corrections will be apparent. Thus *Plate 112* is certainly not of *Chamaedorea geonomiformis* (correctly figured in *Plate 113*) and the palm illustrated as *Pholidostachys pulchra* in *Plate 345* is not that species as described by Burret from Wendland's manuscript. It is, rather, a *Geonoma* and probably *G. binervia* Oersted. The palm figured under the name *Orbignya Cohune* in *Plates 336-338* is today recognized as a distinct species, *Orbignya Guacayule.*

Among the photographs, there appears a handsome series of detail and habit drawings of Mexican palms (including one of a species of *Brahea* under the invalid name *Copernicia depressa*) collected by Liebmann and drawn by J. Bayer and C. Thornam. These are published for the first time with the permission and aid of the Botanical Museum in Copenhagen where the originals are preserved.

Although this volume will not provide the layman with habit photographs of palms, it will be of interest to the serious amateur student. Botanists will find it an extremely useful volume when used with some caution regarding identifications. The photographs are an excellent complement to the usual paucity of actual palm specimens in most herbaria.

H. E. Moore, Jr.

LETTERS

"With an eye always open for palms, we were greatly surprised to find a mature palm growing outdoors in Eugene, Oregon, nearly one thousand miles north of Fillmore. On a previous trip we had seen several *Trachycarpus* specimens growing at Coos Bay, Oregon, directly on the coast. Eugene, however, is over sixty miles inland and about half-way between the California and Washington borders. Said palm was also a *Trachycarpus* and from what we could learn in talking with Oregonians there are several others in the region. The one we spotted was in the 1000 block of 7th St."

Winston H. Haase,
Fillmore, Calif.

2327 Colgate Drive
Costa Mesa, Calif.

Of special interest have been letters written by members as to their observations and as to the luck they have had with certain palms under various conditions. "Cold Tolerance of the Cultivated Palms" by Smith was a terrific article to all members in giving them ideas to try certain palms and the ones it would pay to stay clear of. My own observations cause me to agree that even though *certain* palms appear tender under the conditions at Daytona Beach, they may do very well under cold conditions if they are acclimated to them. Of surprise to me are at least 12 *Howeia Forsteriana* in different locations in my area growing in open sun and some with 20 feet or more of trunk, and they seem to be perfectly developed in every sense (I have even sprouted seed from one). Also *Archontophoenix Cunninghamiana* does well here and I have observed lush specimens (12 foot trunk) growing 15 to 20 miles inland.

Leslie H. Miller

Midland Estate,
Kulai P.O.,
Johore, Malaya
5 October 1959

Acting on the suggestion made by Dr. C. X. Furtado of the Botanic Gardens,

Singapore, I am requesting you to make known to our Palm Society members my recent collection of small-growing Malayan palms such as *Areca, Nenga, Pinanga, Iguanura, Ptychoraphis* and bushy growing *Daemonorops, Korthalsia* and *Calamus*. He thought that the seeds of these palms would be welcome in America and elsewhere. During the month of September, 1959, 28 specimens were collected and identified by Dr. Furtado. Three of these specimens were thought to be new species and he is trying to name them in due course. Among specimens already identified, I fancy most the following dwarf palms: *Areca latiloba, Licuala lanuginosa, L. ferruginea, Iguanura geonomaeformis, Pinanga simplicifrons, P. subintegra, P. limosa* (with both entire or split leaves), *P. cuneifolia, P. pectinata, Daemonorops Kunstleri* (a dwarf and bushy rattan) . . . I am establishing a small nursery of [*Teysmannia altifrons*] in my garden.

Dr. Furtado suggested that nurserymen and institutions could be told that I could send seeds of the species mentioned above. But to be fair to them, I will send the seeds as I find them, because the stock deteriorates in the tropical climate.

I am still collecting, mostly on Sundays and holidays, hoping to bring into book some more new species . . . The rattans are badly represented in most herbaria since the thorns and the difficulties of bringing down a long climbing rattan discourages many from collecting them. I am trying to do this difficult part of the job in the Malayan jungles.

Will those interested please book their requirements with me at the above address early?

Yours faithfully,
TAN AH KING

LA CASA VERDE,
ROUTE 1, BOX 40,
HOMESTEAD, FLORIDA
November 2, 1959

Having formerly been a teacher of Latin, French, and Spanish in that remote civilization fondly remembered as "suburban Philadelphia", I find my fascination for words unabated—even down here at Florida's tip close by the gates to the Everglades National Park.

In reading the "Botanical Explorations of Liberty Hyde Bailey" by Mary H. Moon in *Principes*, Vol. 3, No. 4, p. 123, I find: "*Sabal* is the Latin name of the palmetto palms . . . " Well, now—I wonder what Latin dictionary Mrs. Moon has been using? In *Webster's New International Dictionary* (second edition, unabridged) appears the entry under *sabal:* "NL., of unknown origin." New Latin indeed!

But William A. Dayton, former chief botanist for the United States Forest Service, writing in the *National Geographic Magazine* for October, 1957, p. 515 gets down to the regrettable fact that the word *sabal* is an enigma:

> "The tree's scientific name, *Sabal palmetto*, presents something of a mystery. The species was classified and the term "sabal" first published by the French botanist Michel Adanson in 1763; later he was chided for using "bizarre" words in inventing generic names. Perhaps sabal was one of these. In any case, no one knows what it means or why Adanson chose it for the American palmetto."

And right here I'm going to theorize. Adanson was living in Louis XV's France of high elegance and polish, dealing with strange botanical subjects brought to him from across the wide Atlantic for study and classification. The word *sabal* appears simply to be the

French compound adverb *la-bas*, meaning "over there" or "yonder" spelled backwards. This arrival at a generic name appears to us as rather flippant, but perchance something in Adanson's temperament impelled him to seek to confound the scientists of his time—well versed, no doubt, in both Latin and Greek — by the simplest sort of word twist right out of their own French tongue.

Well, anyway, I'll have to be happy with this logic until someone turns up that New Latin or New Greek dictionary making the word *sabal* just as clear as Serutan!

Very sincerely yours,
BRUCE H. BEELER

[Editor's Note: Despite the fun and logic of reversing *la-bas*, it is unlikely that *Sabal* will ever be listed other than as "of unknown origin." As Backer notes in his *Verklarend Woordenboek* (1936) under *Adansonia*, many of Adanson's names were combinations of letters without meaning and Adanson himself gave no explanation of *Sabal*. Adanson was something of a reformer in things botanical. His comments on names cover several pages of text in volume 1 of his *Famille de Plantes* (1763). His ideas as they relate to names such as *Sabal* are summarized in the following lines translated freely from page clxxix.

"It is necessary then, in order to be able to cite plants, to give names to those which have none; this necessity has been recognized from the times of Horace, and he established that each author, according to his fancy, has the right to give names . . . " and "But these names ought to be simple and primitive, that is to say without significance, for the reasons explained before (page cxxxi)."

Since the International Code of Botanical Nomenclature requires the acceptance of generic names even when composed in an absolutely arbitrary manner (as was *Sabal* apparently) we must accept the name as one without known meaning. Such names are treated as Latin according to the Code. Adanson proposed a number of other names for genera of palms (none acceptable today) which he took from older writers. Thus *Schunda-Pana* (*Caryota*) was used by Rheede in his *Hortus Indicus Malabaricus* (1678-1703) as was *Codda-Pana* (*Corypha*); *Rotang* (*Calamus*), *Saguerus* (*Arenga*) and *Lontarus* (*Borassus*) were taken from Rumphius' *Herbarium Amboinense* (1741-1750); *Dachel* (*Phoenix*) from Prosperi Alpini, *De plantis Aegypti* . . . (1640).

In passing, it might be noted that Adanson did not mention *Sabal Palmetto* which was not formally described (and then as *Corypha Palmetto*) until the publication of Thomas Walter's *Flora Caroliniana* in 1788. The *Sabal* that Adanson knew was *Sabal minor* as it grew in the Royal Garden at Paris. He referred only incidentally to this palm as *Palma Caroliniana* of the "Hortus Regius Parisiensis" or Swamp palmeto of the English.]

The Editor's Corner

Continued from page 5

award as one of the ten best designed sites in the United States for 1959. Mr. Muirhead has published in *Fortune*, *Architectural Forum*, *Better Homes and Gardens* and other magazines. A forthcoming book on palms and their use in the landscape will join his *The Trees On Your Street*, published by the Portland Electric Company.

Dr. C. X. Furtado is a native of Goa, "the so-called 'pimple' of India that has become widely known in recent years." He studied at the Agricultural College in Poona and received his doctorate

from the University of Bombay in 1940. Dr. Furtado is best known among palm students for his studies on *Areca* and Malayan genera of the calamoid palms, but he has written on aroids and on the International Code of Botanical Nomenclature. From 1919 until 1952, when he retired, he was a member of the staff at the former Singapore Botanic Gardens, now the Botanic Gardens, State of Singapore. Despite retirement, he still is active at the Botanic Gardens. In Singapore, he had " . . . opportunities to learn French, Italian, German and a bit of Dutch and Spanish, and also [to] revise my Latin and Portuguese." Dr. Furtado's explanation of the derivation of *Areca* and *Catechu* appears as a welcome addition to his list of publications concerning palms.

* * *

Letters to the Executive Secretary and the Editor continue to include items of possible interest to readers of PRINCIPES. To give them their due, letters or excerpts from them will be found in a department of their own. The Editor is grateful for notices for Palm Literature. Additional references and reviews will be welcomed for inclusion as space permits.

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